

### ABSTRACT

Compositions including carbide-containing nanorods and/or oxycarbide-  
containing nanorods and/or carbon nanotubes bearing carbides and oxycarbides and  
methods of making the same are provided. Rigid porous structures including oxycarbide-  
5 containing nanorods and/or carbide containing nanorods and/or carbon nanotubes bearing  
carbides and oxycarbides and methods of making the same are also provided. The  
compositions and rigid porous structures of the invention can be used either as catalyst  
and/or catalyst supports in fluid phase catalytic chemical reactions. Processes for making  
supported catalyst for selected fluid phase catalytic reactions are also provided.

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